Clearwater Water District Drinking Water Project

SRF Loan #DW 1211: FY18 Amendment #6 (pop. 90)

$500,000

Final Green Project Reserve Justification

Categorical GPR Documentation

1. INSTALLS NEW WATER METERS AND INDIVIDUAL PRV (Water Efficiency). Categorical GPR per 2.2-2a: *Installing any type of water meter in previously unmetered areas …If rate structures are based on metered use; also,* per 2.2-12: *Pressure reducing valves (PRVs).* ($30,488).

2. INSTALLS NEW WELLS AND DISTRIBUTION SYSTEM ELIMINATING THE CURRENT USE OF CHEMICALS AND REDUCING CHEMICAL RESIDUALS (Environmentally Innovative). Business Case GPR per B.4.5-5a, B4.5-5b: *Projects that significantly reduce or eliminate the use of chemicals; Treatment technologies or approaches that significantly reduce the volume of residuals, minimize the generation of residuals, or lower the amount of chemicals in residuals.* ($160,340).

Categorical

1. NEW WATER METER INSTALLATION

Summary

- Installation of 46 water meters on all previously un-metered water service connections. In addition to the new water meter component, the overall project also included drilling of two new groundwater wells and constructing a new distribution system and reservoir to provide a new potable only water distribution system.
- FY18 Amendment amount = $500,000
- GPR portion of loan (AMR) = $30,488 (6%) [Based on Final Installed Costs]

Background

- The water system which was replaced served approximately 90 people and 46 service connections, all of which were unmetered. Water use for the existing system included drinking water, livestock watering, and irrigation. Total annual water use was estimated at 37 million gallons, or 101,060 gallons per day (gpd)[1].
- The overall project addressed public health concerns associated with seasonal high turbidity levels and high levels of disinfection byproducts. The old system used Wall Creek as its surface water source for the entire water supply and the District was unable to meet water quality standards during the spring runoff.
- Because the water system which was replaced was not metered at individual connections, the Water District charged a flat fee for all users. Therefore, there was no financial incentive for the system users to conserve water. The District was also unable to accurately track water usage and could not properly assess the system efficiency and leakage.

Recommendations

- Per the Water Study Amendment[1] two new groundwater wells were drilled, a 20000 gallon water storage tank was constructed, and a new small diameter water distribution system installed to provide water supply for domestic-only water use. The old water distribution system and former water source (Wall Creek) remains in place to provide water for non-domestic water use including livestock watering and irrigation.
- The new domestic-only water system included installation of water meters on all service lines.
- The Clearwater Water District has implemented a rate structure for the new domestic-only water usage.

Conclusion

- Metering of water consumption is an important conservation measure because providing a structured water rate based on usage provides an incentive for system users to conserve water.
- Installing water meters is allowing the Water District to more accurately track water loss and leakage.
- **GPR Costs**: Installing water meters on all 46 service connections = ($121,950[2]); Final = **$30,488[3]**
- **GPR Justification**:
  - The project is Categorically GPR-eligible (Water Efficiency) per Section 2.2-2a*: Installing any type of water meter in previously unmetered areas…if rate structures are based on metered use*[4].

[1] Clearwater Water District Water Study Addendum, April 2012, TD&H Engineering
[2] Nov. 1, 2018 Great West Engineering: Final Cost of entire system
[3] Final Cost Proportioned to SRF Loan DW1211: FY18 Amendment #18
[4] April 21, 2010 EPA Guidance for Determining Project GPR-Eligibility, Attachment 2, p. 7

2. New Wells & Distribution System

Summary

- Two wells, a 20,000 gallon storage reservoir, and distribution system were constructed to supply the Water District with potable-only water. The old water source (Wall Creek) and distribution system will still be used to supply non-potable water such as livestock watering and irrigation. Because the old system is no longer be supplying potable water, it does not now require treatment from the treatment plant.
- The new process significantly reduces the use of chemicals, chemical residuals, and the amount of product water required for backwashing.
- FY12 SRF Loan amount = $500,000; GPR portion of loan = 33% ($160,340) [Final Installed Costs]
- Reduction in chemical use = 95%

Background

- The old water supply for the Water District was surface water via Wall Creek. A treatment plant, constructed in 1983, provided treatment by means of a mixed media pressure filter with chemical feed for coagulation, along with a filter-to-waste after backwashing. The system also required disinfection by means of a sodium hypochlorite solution.
- During the spring runoff, the District was unable to meet water quality standards due to high turbidity levels.
- The District had many instances of excessive levels of disinfection byproducts immediately downstream of the treatment plant.

Booster Station #2

Recommendations

- Per the Water Study Amendment[1] two new groundwater wells were drilled, a 20000 gallon water storage tank constructed, and a new small diameter water distribution system installed to provide water supply for domestic-only water use. The old water distribution system and water source (Wall Creek) remains in place to provide water for non-domestic water use including livestock watering and irrigation.
- As a result of the project constructed with SRF funding, the District is no longer be required to treat the water supplied by Wall Creek. The need for mixed media filtration and chemical injection for coagulation is ***no longer*** required. Also, use of finished water for backwashing of the filter media is ***no longer*** required.
- Chlorine disinfection of the existing surface water source is also ***no longer required*** since the old system is only be supplying water for non-potable uses. The new wells that now supply the District's potable water are equipped with a chlorination system, but with the use of groundwater instead of surface water, the need for chlorination is minimal. The chlorination requirements are now reduced by 95%.

Well #2

(CON'T) NEW WELLS & DISTRIBUTION SYSTEM

Conclusion

- By no longer having to treat the water supply from Wall Creek, the use of chemicals, backwash requirements and chlorine disinfection at the existing treatment plan are no longer necessary. This significantly reduces the use of chemicals and reduces the amount of chemical residuals in the system. It also reduces the amount of finished water required for backwashing the filter system.
- **GPR Costs**: two groundwater wells, storage reservoir and distribution system = $641,358[5]

  2012 GPR-portion of costs = $160,340[6]
- **GPR Justification**[7]:
  - The process is Categorically GPR-eligible (Innovative) per Section 4.5-5a: *technology that significantly reduces the use of chemicals*, and by Section 4.5-5b: *technology that reduces volume of residuals, minimize the generator of residuals or amount of chemical in residuals.*

[5] Nov. 1, 2018 Great West Engineering: Final Cost of complete system
[6] Final Cost Proportioned to SRF Loan DW1211: FY18 Amendment #6
[7] April 21, 2010 EPA Guidance for Determining Project Eligibility, Attachment 2, p.13